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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,783	12/29/2000	Ravi Subramanian	9824-037-999	8764
24341	7590	10/13/2004		
MORGAN, LEWIS & BOCKIUS, LLP. 2 PALO ALTO SQUARE 3000 EL CAMINO REAL PALO ALTO, CA 94306			EXAMINER PHU, PHUONG M	
			ART UNIT 2631	PAPER NUMBER

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/751,783	<b>Applicant(s)</b> SUBRAMANIAN, RAVI	
	<b>Examiner</b> Phuong Phu	<b>Art Unit</b> 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 1-27,32-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-31 and 58-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 07/30/04.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 29-31 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01.

Claim 29 omits functional/operational interrelationships of the operation “demodulating multipath version of a traffic signal” with other functional operations, claimed in claims 28 and 29 (e.g., “correcting the filtered digital signal”, etc.) and/or omits interrelationships of the element “traffic signal” with other claimed elements (e.g., “analog signal”, “digital signal”, “filtered digital signal”, etc.) for making the claimed receiver as a complete operative system.

Claim 30 omits functional/operational/connectional interrelationships of “configurable parameter estimator” with other elements, claimed in claims 28 and 30, (e.g., a chip-matched filter, an A/D converter, an RF/IF stage, etc.), and/or omits interrelationships of the element “a configurable length” with other claimed elements (e.g., “analog signal”, “digital signal”, “filtered digital signal”, etc.) for making the claimed receiver as a complete operative system.

Claim 31 omits functional/structural/connectional interrelationships of “configurable correction device” with other elements, claimed in claims 28 and 31 (e.g., a configurable digital coherent demodulator system, a chip-matched filter, an A/D converter, and/or an RF/IF stage) and/or omits interrelationships of the element “a configurable delay value” with other claimed

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elements (e.g., “analog signal”, “digital signal”, “filtered digital signal”, etc.) for making the claimed receiver as a complete operative system.

4. Claims 58-63 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01.

Claim 58 omits functional interrelationships of step “having a feed forward phase correction signal” with other steps, claimed in the claim (e.g., steps of receiving, converting, filtering and/or processing) and/or omits interrelationships of the element “a feed forward phase correction signal” with other claimed elements (e.g., “analog signal”, “digital signal”, “complex channel signal”, etc.) for making the claimed method as a complete operative method.

Claim 61 omits functional interrelationships of step (e) “feeding forward a digital phase correction signal... multipath data signals” with other steps (a-d), claimed in the claims 58-61, and/or omits interrelationships of the elements “a digital phase correction signal” and “demodulated multipath data signals” with other claimed elements (e.g., “analog signal”, “digital signal”, “complex channel signal”, etc.) for making the claimed method as a complete operative method.

Claim 62 omits functional interrelationships of steps (d1) “receiving a configurable pilot filter length ... configurable demodulator system, (d2) “generating... phase estimator” with other steps (a-d, d1), claimed in the claims 58-62, omits interrelationships of “configurable pilot channel estimator portion” and “open loop phase estimator” with other claimed elements (e.g., RF/IF stage, A/D converter, chip-matched filter), and/or omits relationships of “a configurable pilot filter length”, “digital error correction signal” with other claimed elements (e.g., “analog

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signal”, “digital signal”, “complex channel signal”, etc.) for making the claimed method as a complete operative method.

Claim 63 omits functional interrelationships of step (e) “correcting... correction device” with other steps (a-d), claimed in the claims 58-63, and/or omits interrelationships of “a configurable pilot assisted correction device” with other claimed elements (e.g., RF/IF stage, A/D converter, chip-matched filter) for making the claimed method as a complete operative method.

Claims, (if any) as being depended on above claims, are therefore also rejected.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 28 and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Davidovici (5,802,102), previously cited.

As per claims 28 and 58, see figures 1 and 2, and col. 7, line 33 to col. 10, line 20, Davidovici discloses a method and associated system (see figure 1) comprising:

step/means (31-34) of receiving an analog signal at an RF/IF stage;

step/means (33,34) of converting the analog signal to digital signal using an A/D converter (33,34);

step/means (35,37) of filtering the digital signal using a matched filter (35, 37) to obtain a complex channel signal; and

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step/means (41, 46, 38, 39) of processing the complex channel signal outputted from means (35, 37) using a demodulator (41, 46, 38, 39) wherein step/means (41, 46, 38, 39) has control signals (considered as correction signals) outputted from means (46) for phase/timing correcting the filtered digital signal, namely, the complex channel signal (e.g., step/means (41, 46, 38, 39) having a control signal, feed-forwarded from means (46) to means (45, 44, 43) for concurrently correcting phase/timing of the filtered complex channel signal during the filtering process (see figure 1, and col. 8, lines 54-62, col. 11, lines 3-10), a control signal feed-forwarded from means (46) to means (41, 42) for adjusting phase/timing of the filtered complex channel signal during processes of demodulating (41) and diversity combining (42) (see col. 9, lines 29-44, etc.).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 28, 58-61 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (6,219,374), in view of Critchlow (previously cited).

As per claims 28 and 58, see figure 3, and col. 4, line 10 to col. 7, line 3, Kim et al discloses a method and associated system comprising:

step/means (301) of receiving an analog signal at an RF/IF stage;

step/means (303,304) of filtering said analog signal using a matched filter (303, 304) to obtain a complex channel signal outputted from said matched filter; and

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step/means (305-318) of processing the complex channel signal outputted from means (303,304) using a demodulator (305-318) having correction signals outputted from means (317, 318) and forwarded to means (306, 307) for correcting/adjusting the phase of the complex channel signal.

Kim et al does not disclose step/means of converting the analog signal to a digital signal for further being filtered by said matched filter in step/means (303,304). However, Kim et al does not disclose whether said matched filter is a digital matched filter or how said matched filter is implemented. Critchlow teaches that a matched filter (24) can be implemented as a digital matched filter receiving digital input signal(s) and filtering said digital input signal(s) (see figure 1). Therefore, for an application, it would have been obvious that one skilled in the art, when building Kim et al invention, could implement the matched filter (303, 304) as a digital matched filter, as taught by Critchlow. In such implementation of Kim et al in view of Critchlow, step/means of converting the analog signal, obtained from the RF/IF stage, to a digital signal must be needed prior to step/means (303,304) for providing said digital signal for further being filtered by said matched filter in step/means (303,304).

As per claim 59, Kim et al discloses step/means (305, 306) of demodulating a user code sequence ( $C_k(n)$ ) from the complex channel signal to produce a code demodulated sample; and step/means (311, 312) of communicating the code demodulated sample to a plurality of demodulators (313, 314).

As per claim 60, Kim et al discloses step/means (313, 314) of demodulating a traffic code sequence ( $W^I(n)$ ,  $W^Q(n)$ ) from the code demodulated sample to produce a demodulated output data sample; and step/means (315, 316, 317, 318) of communicating the demodulated output data

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sample to a plurality of pilot assisted correction devices (307-310) for each of a plurality of channels of (I, Q).

As per claim 61, Kim et al discloses step/means (317, 318) of feeding forward a phase correction signal (Channel Estimate Values) from each of a plurality of demodulators to respectively correct a phase error in each of a plurality of data signals.

As per claim 63, Kim et al discloses step/means (307-310) of correcting a traffic channel via the correction signals generated within the demodulator by using a correction device (307-310).

#### ***Response to Arguments***

9. Applicant's arguments filed on 07/30/04 have been fully considered but they are not, in part, persuasive.

The previous objection to the Specifications has been withdrawn since the Specification was amended to overcome the objection.

The previous rejection under 35 USC 112, to claim 28, has been withdrawn since the claim was amended to overcome the objection.

Applicant's arguments with respect to the previous rejections under 35 USC 112, to claims 29-31 and 58-63, have been considered. However, upon further consideration, the claims, after being amended, are still rejected with reasons set forth above in this Office Action.

Applicant's arguments with respect to the previous rejections under 35 USC 102, to claims 28 and 58, as being anticipated by Critchlow, is render moot. The rejections have been withdrawn.



Applicant's arguments with respect to the previous rejections under 35 USC 102, to claims 28 and 58, as being anticipated by Davidovici, and under 35 USC 103, to claims 28, 58-61 and 63, as being unpatentable over Kim et al, in view of Critchlow, are not persuasive.

The applicant mainly argues that regarding to claim 28, neither of Davidovici and Kim et al, in view of Critchlow discloses the limitation “at least one configurable digital coherent demodulator system for feed forwarding phase correcting the filtered digital signal”; and regarding to claim 58, neither of Davidovici and Kim et al, in view of Critchlow discloses the limitation “processing the complex channel signal using a configurable demodulator system having a feed forward phase correction signal generated therein”.

The examiner respectfully disagrees.

With respect to reference Davidovici, as explained above in this Office Action, in Davidovici, step/means (41, 46, 38, 39) discloses the two limitations in such a way that step/means (41, 46, 38, 39) process the complex channel signal outputted from means (35, 37) using a demodulator (41, 46, 38, 39) (which is accounted for “at least one configurable digital coherent demodulator system” of claim 28 and “a configurable demodulator system” of claim 58) wherein step/means (41, 46, 38, 39) has control signals (considered as correction signals which are accounted for “feed forward phase correcting the filtered digital signal” of claim 28 and “a feed forward phase correction signal” of claim 58) outputted from means (46) for phase/timing correcting the filtered digital signal, namely, the complex channel signal (e.g., step/means (41, 46, 38, 39) having a control signal, feed-forwarded from means (46) to means (45, 44, 43) for concurrently correcting phase/timing of the filtered complex channel signal during the filtering process (see figure 1, and col. 8, lines 54-62, col. 11, lines 3-10), a control

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signal feed-forwarded from means (46) to means (41, 42) for adjusting phase/timing of the filtered complex channel signal during processes of demodulation (41) and diversity combining (42) (see col. 9, lines 29-44, etc.). Further, note that claim 28 does not have other limitations showing how the function “feed forwarding phase correcting” is formed in order to make it distinguishable from the operation of step/means (41, 46, 38, 39) for feed forwarding phase correcting the complex channel signal, and that claim 58 does not have other limitations showing how “a feed forward phase correction signal” is formed and used in order to make it distinguishable from Davidovici control signals.

With respect to reference Kim et al, in view of Critchlow, as explained above in this Office Action, in Kim et al, in view of Critchlow, step/means (305-318) discloses the two limitations in such a way that of step/means (305-318) processes the complex channel signal outputted from means (303,304) using a demodulator (305-318) (which is accounted for “at least one configurable digital coherent demodulator system” of claim 28 and “a configurable demodulator system” of claim 58) wherein step/means (305-318) has correction signals (which are accounted for “feed forward phase correcting the filtered digital signal” of claim 28 and “a feed forward phase correction signal” of claim 58) outputted from means (317, 318) and forwarded to means (306, 307) for correcting/adjusting the phase of the complex channel signal. Further, note that claim 28 does not have other limitations showing how the function “feed forwarding phase correcting” is formed in order to make it distinguishable from the operation of step/means (305-318) for feed forwarding phase correcting the complex channel signal, and that claim 58 does not have other limitations showing how “a feed forward phase correction signal”

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is formed and used in order to make it distinguishable from the correction signals in Kim et al, in view of Critchlow.

***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (6:30-2:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Phuong Phu 9/6/04*

Phuong Phu

Phuong Phu  
Primary Examiner  
Art Unit 2631

**PHUONG PHU  
PRIMARY EXAMINER**